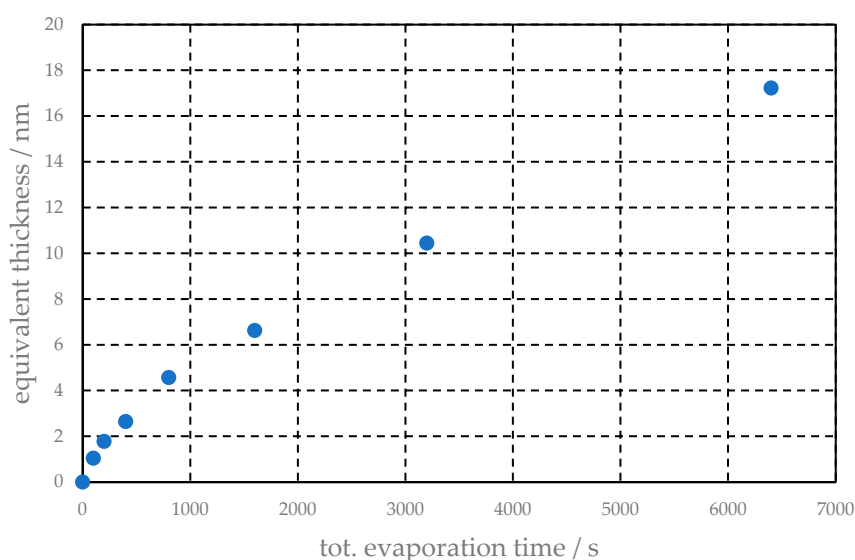


# Interaction of Aluminum and Platinum Surfaces with the Ionic Liquids 1-butyl-1-methylpyrrolidinium bis(trifluoromethylsulfonyl)imide and 1-ethyl-3-methylimidazolium bis(trifluoromethylsulfonyl)imide

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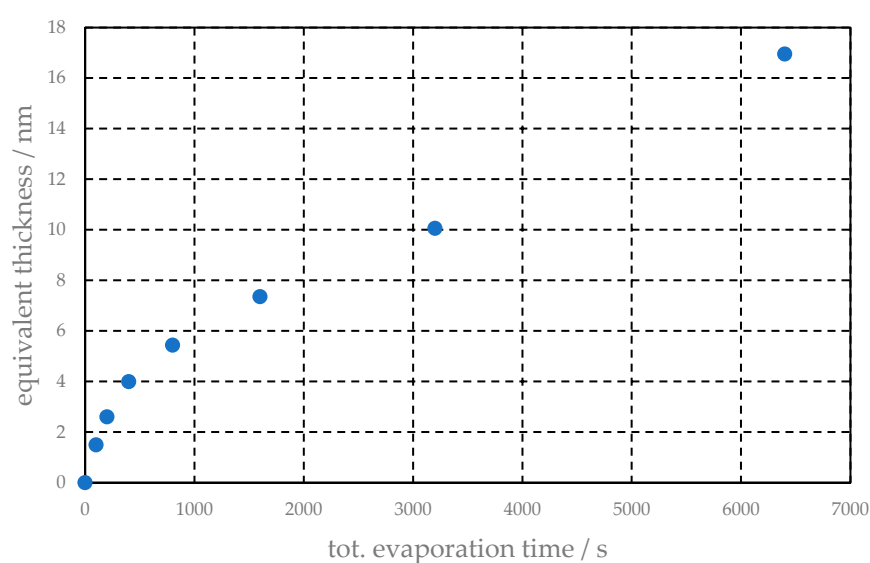
**Figure S1.** Equivalent layer thickness of [Py<sub>1,4</sub>]TFSI on Pt over total evaporation time.

**Table S1.** Fitting constraints for detail spectra: [Py<sub>1,4</sub>]TFSI on platinum.

Component				
 <p>Copyright: © 2023 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license</p>	Detail spectra	BE Constraint / eV	Line shape	FWHM

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Pt 4f <sub>7/2</sub>	Pt 4f	70.72-70.79	LA(1.2,85,70)	1.01-1.03
F(TFSI)	F 1s	688.33-688.88	GL(30)	1.78-1.85
S(TFSI)	S 2p	168.25-168.91	GL(30)	1.15-1.25
C(TFSI)	C 1s	292.20-292.87	GL(30)	1.11-1.12
C-C, C-R, CO <sub>ad</sub>	C 1s	283.94-284.04	GL(30)	1.19-1.21
C(alkyl)	C 1s	284.92-285.36	GL(30)	1.49
C(hetero)	C 1s	268.02-286.68	GL(30)	1.31-1.35
O(TFSI)	O 1s	532.06-532.64	GL(30)	1.35-1.40
N([Py <sub>1,4</sub> ])	N 1s	402.00-402.54	GL(30)	1.38-1.41
N(TFSI)	N 1s	398.94-399.42	GL(30)	1.34-1.38

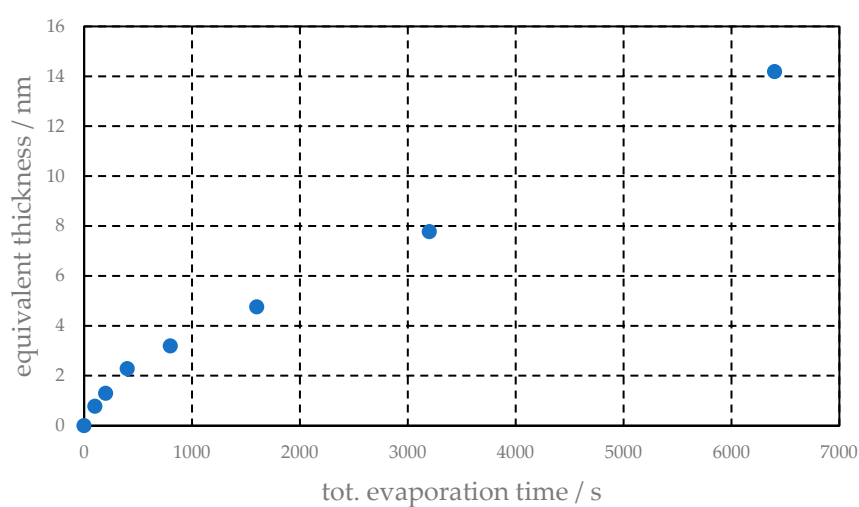


**Figure S2.** Equivalent layer thickness of [Py<sub>1,4</sub>]TFSI on Al over total evaporation time.

**Table S2.** Fitting constraints for detail spectra: [Py<sub>1,4</sub>]TFSI on aluminum.

Component	Detail spectra	BE Constraint / eV	Line shape	FWHM
Al 2p <sub>3/2</sub>	Al 2p	72.60-72.90	GL(30)	0.70-0.75
Al <sub>x</sub> O	Al 2p	73.80-74.20	GL(30)	1.00-1.05
AlOOH, Al(OH) <sub>3</sub> , Al <sub>2</sub> S <sub>3</sub>	Al 2p	74.45-74.60	GL(30)	1.00-1.10
Al <sub>2</sub> O <sub>3</sub>	Al 2p	75.10-75.15	GL(30)	1.00-1.05
Al <sub>2</sub> (SO <sub>4</sub> ) <sub>3</sub>	Al 2p	75.90-76.10	GL(30)	1.00-1.10
AlF <sub>3</sub>	Al 2p	76.50-77.00	GL(30)	1.00-1.10
F(TFSI)	F 1s	689.96-690.05	GL(30)	1.78-1.99
CF <sub>2</sub> , AlF <sub>3</sub>	F 1s	687.10-687.50	GL(30)	1.58-1.87
CF	F 1s	685.94-686.20	GL(30)	1.58-1.86
S(TFSI)	S 2p	169.77-170.05	GL(30)	1.20-1.22
NCF <sub>2</sub> SO, SO <sub>2</sub>	S 2p	171.50-171.80	GL(30)	1.05-1.10
sulfide	S 2p	162.35-162.40	GL(30)	1.13-1.14
C(TFSI)	C 1s	293.97-294.18	GL(30)	1.18-1.22
CF, CF <sub>2</sub> , COF <sub>2</sub>	C 1s	293.30-293.50	GL(30)	1.18-1.20
C-C, C-R, CO <sub>ad</sub>	C 1s	284.60-284.90	GL(30)	1.33-1.36
C(alkyl)	C 1s	286.34-286.48	GL(30)	1.37-1.39

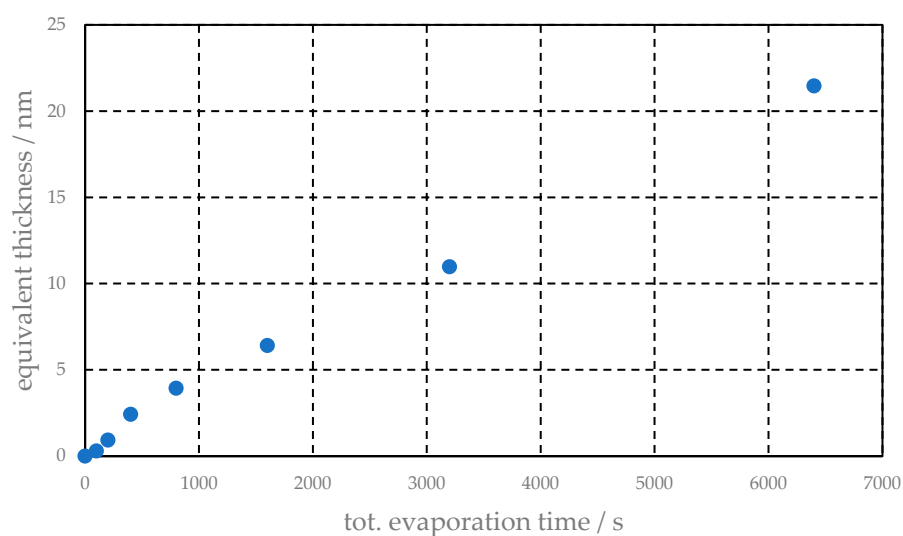
C(hetero)	C 1s	287.32-287.78	GL(30)	1.22-1.25
C≡N, CFO	C 1s	288.00-288.20	GL(30)	1.70-1.74
CSO <sub>2</sub>	C 1s	285.50-285.70	GL(30)	1.20-1.30
Miss. H, Alkyl ch.	C 1s	281.60-282.40	GL(30)	1.20-1.30
O(TFSI), Al(NSO <sub>2</sub> ) <sub>3</sub>	O 1s	533.70-533.90	GL(30)	1.40-1.50
Al <sub>k</sub> O	O 1s	531.70-531.90	GL(30)	1.19-1.30
C-O, COR, Al <sub>2</sub> O <sub>3</sub>	O 1s	532.20-532.50	GL(30)	1.80-1.90
AlOOH, Al(OH) <sub>3</sub>	O 1s	534.50-534.70	GL(30)	1.25-1.30
N([Py <sub>1,4</sub> ])	N 1s	403.50-403.80	GL(30)	1.20-1.25
N(TFSI), Al(NSO <sub>2</sub> ) <sub>3</sub>	N 1s	400.30-400.60	GL(30)	1.28-1.29
Miss. CF <sub>3</sub> , O	N 1s	399.05-399.20	GL(30)	1.00-1.10
TFSI <sub>dec.</sub>				



**Figure S3.** Equivalent layer thickness of [EMIm]TFSI on Pt over total evaporation time.

**Table S3.** Fitting constraints for detail spectra: [EMIm]TFSI on platinum.

Component	Detail spectra	BE Constraint / eV	Line shape	FWHM
Pt 4f <sub>7/2</sub>	Pt 4f	70.87-70.94	LA(1.2,85,70)	1.07-1.09
F(TFSI)	F 1s	688.33-688.89	GL(30)	1.75-1.80
S(TFSI)	S 2p	168.24-168.94	GL(30)	1.15-1.25
C(TFSI)	C 1s	292.19-292.88	GL(30)	0.95-1.27
C-C, C-R	C 1s	283.98	GL(30)	1.12
C1	C 1s	286.50-287.63	GL(30)	0.95-1.27
C2	C 1s	285.80-286.92	GL(30)	0.95-1.27
C3	C 1s	285.13-286.40	GL(30)	0.95-1.27
C4	C 1s	284.40-285.27	GL(30)	0.95-1.27
O(TFSI)	O 1s	532.06-532.67	GL(30)	1.32-1.40
N([Py <sub>1,4</sub> ])	N 1s	401.90-402.15	GL(30)	1.30-1.35
N(TFSI)	N 1s	399.00-399.60	GL(30)	1.38-1.40
Miss. Ch., charge,...	N 1s	400.30-400.50	GL(30)	1.20-1.27



**Figure S4.** Equivalent layer thickness of [EMIm]TFSI on Al over total evaporation time.

**Table S4.** Fitting constraints for detail spectra: [EMIm]TFSI on aluminum.

Component	Detail spectra	BE Constraint / eV	Line shape	FWHM
Al 2p <sub>3/2</sub>	Al 2p	72.60-72.90	GL(30)	0.70-0.75
Al <sub>x</sub> O	Al 2p	73.80-74.20	GL(30)	1.00-1.05
AlOOH, Al(OH) <sub>3</sub> , Al <sub>2</sub> S <sub>3</sub>	Al 2p	74.45-74.60	GL(30)	1.00-1.10
Al <sub>2</sub> O <sub>3</sub>	Al 2p	75.10-75.15	GL(30)	1.00-1.05
Al <sub>2</sub> (SO <sub>4</sub> ) <sub>3</sub>	Al 2p	75.90-76.10	GL(30)	1.00-1.10
AlF <sub>3</sub>	Al 2p	76.50-77.00	GL(30)	1.00-1.10
F(TFSI)	F 1s	689.80-689.90	GL(30)	1.75-1.82
CF <sub>2</sub> , AlF <sub>3</sub>	F 1s	687.30-687.50	GL(30)	1.20-1.70
CF	F 1s	686.00-686.20	GL(30)	1.70-1.90
S(TFSI)	S 2p	169.90-170.10	GL(30)	1.20-1.22
Al(NSO <sub>2</sub> ) <sub>3</sub>	S 2p	170.85-170.90	GL(30)	1.10-1.15
NCF <sub>2</sub> SO, SO <sub>2</sub>	S 2p	171.75-171.80	GL(30)	1.05-1.10
sulfide	S 2p	162.35-162.40	GL(30)	1.13-1.14
C(TFSI)	C 1s	293.85-294.10	GL(30)	1.18-1.22
	C 1s	295.55	GL(30)	0.88
CF, CF <sub>2</sub> , COF <sub>2</sub>	C 1s	292.90-293.10	GL(30)	1.15-1.20
C-C, C-R, CO <sub>ad</sub>	C 1s	284.65-284.80	GL(30)	1.15-1.40
C1	C 1s	288.30-288.80	GL(30)	1.06-1.09
C2	C 1s	287.30-288.20	GL(30)	0.94-0.97
C3	C 1s	286.20-287.50	GL(30)	0.94-0.97
C4	C 1s	286.00-286.50	GL(30)	1.06-1.09
C≡N, CFO	C 1s	288.00-288.20	GL(30)	1.70-1.74
CSO <sub>2</sub>	C 1s	285.75-285.90	GL(30)	1.15-1.30
Miss. H, Alkyl ch.	C 1s	281.80-281.95	GL(30)	1.15-1.35
Miss. H, Alkyl ch.	C 1s	282.75-282.90	GL(30)	1.15-1.25
O(TFSA), Al(NSO <sub>2</sub> ) <sub>3</sub>	O 1s	533.70-533.90	GL(30)	1.40-1.50
Al <sub>x</sub> O	O 1s	531.70-531.90	GL(30)	1.19-1.30
C-O, COR, Al <sub>2</sub> O <sub>3</sub>	O 1s	532.20-532.50	GL(30)	1.45-1.55
AlOOH, Al(OH) <sub>3</sub>	O 1s	534.50-534.70	GL(30)	1.25-1.30
N([Py <sub>1,4</sub> ])	N 1s	403.50-403.80	GL(30)	1.20-1.25

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N(TFSI), Al(NSO <sub>2</sub> ) <sub>3</sub>	N 1s	400.30-400.60	GL(30)	1.28-1.29
Miss. CF <sub>3</sub> , O, TFSI <sub>dec</sub>	N 1s	399.05-399.20	GL(30)	1.00-1.10

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